Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE INSTRUCTION 10-1301
September 30, 2002

Operations and Services
Surface Observing Program (Land)*, *NDSPD 10-13

Surface Observing (Land)

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SUMMARY OF REVISIONS: This directive supersedes Weather Service Operations Manual Chapter B-10, Surface Observing Programs (Land), Issuance 00-13, dated December 21, 2000

Signed by September 30, 2002
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Water, and Weather Services

Surface Observing

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1. General. This instruction describes surface weather observing programs at land stations staffed or managed by the National Weather Service (NWS).

2. Introduction. The surface observing program is a part of the total observation concept. The concept integrates manually observed weather observations, automated weather observations, supplementary observations from the surface observing program and data from complementary remote sensing systems. Together, these elements provide the necessary surface

weather observing components to meet NWS mission requirements. The NWS utilizes the total observation concept to provide quality forecasts and warnings.

2.1 Aviation Observing Programs. NWS provides aviation observations in support of national requirements and international commitments. The NWS provides quality observations through automated means whenever possible at designated locations. At other locations aviation observations are provided through manual methods. NWS staff responsible for aviation weather observations should provide those observations as described in NWS Observing Handbook No. 7 (WSOH #7).

2.1.1 Automated Surface Observing Systems (ASOS). An unattended ASOS meets all requirements to support the forecast and warning programs of the NWS. NWS staff will augment and backup ASOS in accordance with the Aviation Service Levels at locations designated in Exhibit A. Augmentation and backup will be performed as an ASOS basic weather watch (see Appendix A).

2.1.2 Supplementary Aviation Weather Reporting Stations (SAWRS). The NWS will support the aviation industry through the management of the SAWRS program. Details on the operation of SAWRS are given in NWS Instruction (NWSI) 10-1306. Observations at SAWRS are provided as described in NWS Observing Handbook No. 8 (WSOH #8).

2.1.3 Aviation Paid (A-Paid) and Aviation Voluntary (A- Voluntary) Observing Program. The NWS regions may fund and establish A-Paid and A-Voluntary observing stations in order to carry out their aviation forecast responsibilities. Site these stations and their equipment in accordance with NWSI 10-1302.

2.2 Synoptic Observation Program. NWS provides synoptic observations in support of national requirements and international commitments. NWS will provide observations through automated means at designated ASOS sites. At other locations synoptic observations will be provided by manual methods. NWS staff responsible for synoptic weather observations should produce the observations as described in Federal Meteorological Handbook No. 2 (FMH-2).

2.3 Supplementary Observation Program. All NWS staffed offices provide Supplementary Data Observations (SDO) and Supplementary Climatic Data (SCD) observations in support of national requirements. Details on these observations and their contents are documented in WSOH #7.

2.4 Cooperative Observing Program (COOP). The NWS will provide climatological observations in support of national requirements and international commitments. The primary method of providing these observations is through the COOP. The NWS will provide observations through automated means whenever possible at designated locations. At other locations cooperative observations will be provided by manual means. Details on the cooperative program are found in NWSI 10-1307. COOP observations are provided in compliance with NWS Observing Handbook No. 6 (WSOH#6).

2.5 Other NWS Observing Programs. NWS Forecast Offices should develop local observing programs to meet national and regional forecast, warning, and verification requirements. Other NWS surface observing programs are covered in NWS Directive System policy and procedure directives pertaining to marine reporting stations, agricultural weather stations, fire weather observation stations, severe storm reporting networks.

2.6 Compensation. Paid observers are usually paid on a per observation basis. The payment rates will be determined by the regional headquarters.

3. Responsibilities of NWS Organization.

3.1 The Office of Climate, Water, and Weather Services (OCWWS) at National Weather Service Headquarters. OCWWS provides guidance and direction for the execution of the surface observation program. To carry out this responsibility OCCWS:

a. Develops requirements for surface observing programs.

b. Coordinates and negotiates with other government agencies on all national and international matters pertaining to surface observing.

c. Sets policy on surface observing matters; sets standards for accuracy and siting of weather instruments.

d. Procures, tests and deploys instrumentation for nationally supported observing programs.

e. Prepares and distributes documentation and forms for use in surface observing programs.

3.2 National Weather Service Regional Headquarters. NWS regional headquarters are responsible for implementing policy established by OCWWS. They coordinate with other government agencies at the regional level. Regions will:

a. Ensure field offices implement surface observing programs in compliance with national policy.

b. Review and approve requests of field offices to establish or close the following types of observing stations:

(1) A-Paid and A-Voluntary.

(2) SAWRS.

(3) COOP.

c. Document agreements, and any fees, for observing services between the NWS and the observer. Use NOAA Form 36-14 for the A-Paid program.

d. Provide Contract Officer's Technical Representative(s) for contract observing sites.

e. Perform station visitations.

f. Notify OCWWS of suspension of any observing program.

g. Perform COOP station inspections.

3.3 National Weather Service Field Offices. The data provided by the surface observing programs is vital to the completion of the NWS mission. The meteorologist-in-charge (MIC) ensures personnel and resources are directed to:

a. Provide and disseminate observations.

b. Manage/supervise observing programs.

c. Perform quality control of observations.

d. Maintain a Technical Library. The library will consist at a minimum of the following:

(1) Office Of Federal Coordinator for Meteorology (OFCM) Handbooks:

(a) FMH #1, Surface Weather Observations and Reports

(b) FMH #2, Surface Synoptic Codes

(c) OFCM - Siting of Meteorological Sensors at Airports

(2) Observing Handbooks:

(a) WSOH #2, Cooperative Station Observations

(b) WSOH #6 Cooperative Program Operations

(c) WSOH #7 Surface Observations

(d) WSOH #8 Aviation Weather Observations for SAWRS

(e) FAA Order 7900.5 Surface Weather Observing

(3) ASOS Documentation:

(a) ASOS Software Users Manual

(b) ASOS User's Guide

(c) ASOS Ready Reference Guide

(4) Training Documentation:

(a) Training Guide in Surface Weather Observations

(b) International Cloud Atlas (abridged Atlas) or cloud chart

Appendix A - ASOS Basic Weather Watch Procedure

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1. Definition. An ASOS basic weather watch (ABWW) requires a recurring, but not continuous, evaluation of the accuracy and representativeness of the current ASOS observation. Staff performing an ABWW are not expected to detect and report all weather changes immediately as they occur.

2. Procedure for performing an ABWW. The observer will augment METAR observations in accordance with the appropriate service level standards. This includes periodically checking the current observation to determine if a SPECI has been generated requiring augmentation or backup. The observer will conduct an evaluation of the representativeness and accuracy of the current observation when advised by any reliable source the existing conditions differ from those reported.

3. Definition of Representativeness. An observation is representative if it accurately portrays the weather conditions present at the primary instrument approach. If the observation differs by reportable values, but the differences do not change operations of the airport or aircraft, then the differences are not operationally significant. The observation would continue to be representative.

Appendix B -Managing Weather Observing Programs

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1. Definition of "Observation Program." As used in this instruction, observation program refers to all station activities, equipment, schedules, and procedures related to making, recording, or disseminating the observations for which the station is responsible.

2. Procedures for Establishing Observation Sites. New sites may be established if:

   a. funds, both one-time and recurring, are available, and

   b. the meteorologist in charge or their representative has determined the location satisfies all applicable siting criteria defined in; Federal Meteorological Handbook Number 1 (FMH-1), Federal Standard for Siting Meteorological Sensors at Airports (FCM-S4-1994), and NWSI 10-1302. The site location must allow the observer to evaluate all elements within the period of the observation.

3. Procedure for Discontinuing Observation Programs Due to Station Closures. Adhere to the following procedures when a decision is made to close a station:

   a. NWS will not maintain observations at closed stations.

   b. NWS may agree to requests by others wishing to continue the observation program. In such a case, the requesting party must agree to assume responsibility for funding all costs of the program above and beyond costs incurred by NWS to provide normal support functions.

   c. If a non-Federal Government party assumes observational responsibility, all NWS owned surface observation equipment will be removed and retained by the WFO for future use or returned to the National Logistics Support Center (NLSC), Kansas City, Missouri.

4. Historical File of Surface Observation Forms. Retain corrected carbon copies of the surface observation forms on station for 90 days. After 90 days the copies may be offered to a local public library, public institution, or university, etc., capable of archiving the data for public use. If no local user can be found, the forms may be destroyed after the retention requirement has been satisfied.

5. Determination of Station Elevation (Hp). At new airport stations, Hp will be equal to the Field Elevation (Ha) rounded to the nearest foot. At non-airport stations, Hp should be equal to the height of the barometer (Hz) rounded to the nearest foot. At existing stations, Hp will be revised in accordance with the above whenever there is some other reason to issue new elevation data for the station and the difference between the old and revised Hp exceeds 50 feet. Changes in Hp are made by HQ.

5.1 Preparation of Pressure-reduction Tables. HQ will prepare these tables for individual stations upon request. To obtain these tables, the following information must be provided:

a. Station name and type,

b. Field elevation (Ha), station elevation (Hp), and height of barometer (Hz), all to the nearest foot, and

c. Latitude and longitude (in degrees and minutes).

d. Average annual temperature for the station.

Exhibit A - Designated NWS ASOS locations and Aviation Service levels

SVC LVL	SID	SITE NAME	CITY, STATE
A	BET	Bethel	Bethel, AK
B	ADQ	Kodiak	Kodiak, AK
B	AKN	King Salmon	King Salmon, AK
B	OME	Nome	Nome, AK
C [1]	AMA	Amarillo Intl.	Amarillo, TX
C	ANN	Annette Island	Metlakatla, AK
C [1]	BGM	Binghamton Rgnl.	Binghamton, NY
C [1]	BIS	Bismarck Municipal	Bismarck, ND
C [1]	BOI	Boise Air Terminal	Boise, ID
C [1]	BRO	South Padre Is. Intl.	Brownsville, TX
C [1]	BMW	Wiley Post-Will Rogers	Barrow, AK
C	PDB	Cold Bay	Cold Bay, AK
C [1]	CRS	Cheyenne	Cheyenne, WY
C [1]	FSS	Joe FSS Field	Sioux Falls, SD
C [1]	GJ	Walker Field	Grand Junction, CO
C [1]	G.B.	Austin Streusel Intl.	Green Bay, WI
C [1]	GSP	Greenville-Spartanburg	Greer, SC
C [1]	GTF	Great Falls Intl.	Great Falls, MT
C	GUM	Agana Intl.	Agana, Guam
C [1]	ILM	New Hanover Intl.	Wilmington, NC
C	ITO	Hilo	Hilo, HI
C [1]	LCH	Lake Charles Rgnl.	Lake Charles, LA
C	LIH	Lihue	Lihue, HI
C [1]	MAF	Midland Intl.	Midland, TX
C	MCG	McGrath	McGrath, AK
C [1]	MFR	Rogue Valley Intl.	Medford, OR
C [1]	MSO	Missoula Intl.	Missoula, MT
C	OTZ	Ralph Wien Memorial	Kotzebue, AK
C [1]	PAH	West Kentucky AirPark	Paducah, KY
C [1]	PDT	Eastern Oregon Rgnl.	Pendleton, OR
C [1]	PIH	Pocatello Rgnl.	Pocatello, ID
C [1]	PUB	Pueblo Memorial	Pueblo, CO
C [1]	SGF	Springfield-Branson Rgnl.	Springfield, MO
C [1]	SJT	Mathis Field	San Angelo, TX
C [1]	TOP	Topeka	Topeka, KS
D [1,2]	ABR	Aberdeen Rgnl.	Aberdeen, SD
D [1,2]	DDC	Dodge City Rgnl.	Dodge City, KS
D [1,2]	GGW	Glasgow Rgnl.	Glasgow, MT

Exhibit A - Designated NWS ASOS locations and Aviation Service levels

SVC LVL	SID	SITE NAME	CITY, STATE
D [1,2]	GLD	Goodland Municipal	Goodland, KS
D [1,2]	JKL	Julian Carroll	Jackson, KY
D [1,2]	LBF	North Platte Rgnl.	North Platte, NE
D [1,2]	RIW	Riverton Rgnl.	Riverton, WY
D [2]	SNP	St. Paul Island	St. Paul Is., AK
D [2]	ISN	Williston Intl.	Williston, ND
D [2]	YAK	Yakutat	Yakutat, AK

Superscript [1] = Responsibility being transferred to the FAA by October 1, 2002.
Superscript [2] = D level assigned, C level performed